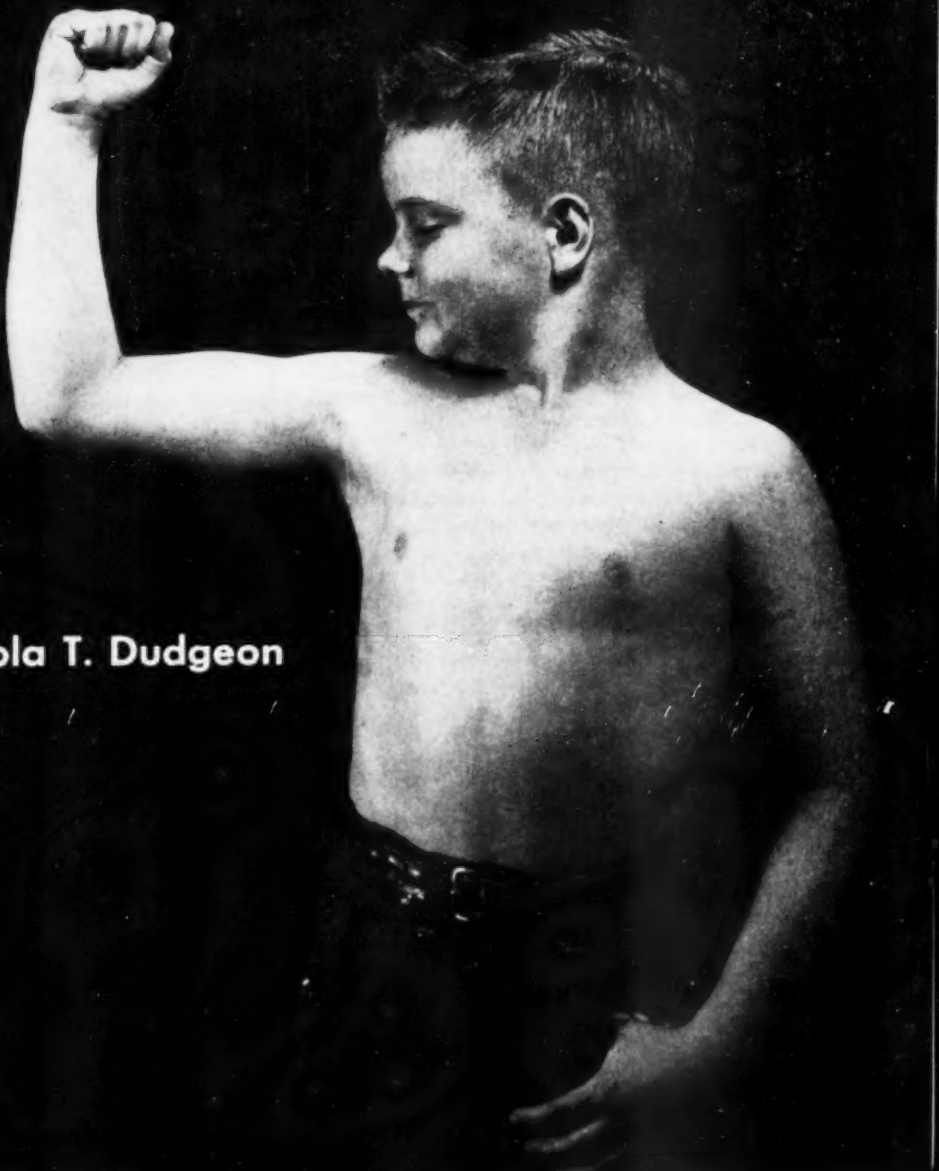
CORNELL EXTENSION BULLETIN 775

FOOD Makes a Difference



Lola T. Dudgeon

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FOOD MAKES A DIFFERENCE

Lola T. Dudgeon

MOTHERS and future homemakers have the job of seeing that the family is well-fed. You are the ones who select and prepare three meals a day to satisfy your youngsters' healthy appetites. But you also must plan meals for the active, vigorous adults and for the less active older members of the family.

Do you know that the food you choose can make a difference in the growth and development of your children? That the food you select can make a difference in the number of active years you and your husband will have? That the right food may prolong the vigor of life?

Yes, food makes a difference in your life. The kinds of food as well as the amount of food you eat affect your health for better or for worse. Farmers have known for many years that the amount and kind of feed fed to livestock makes a big difference in animal growth and reproduction. So it is with people.

FOOD MADE A DIFFERENCE

RESULTS of a few studies that show how food made a difference in the health of a number of persons follow:

Milk

Milk (1)[1] made a difference in the health of a large number of school children who had a pint of milk each day in addition to their regular meals. A second group of children in their school had the same food except milk. After four years, the children who received the milk were taller, had gained more weight, had fewer illnesses, and made better school marks than did the children who had no milk.

In another study (2 and 3), adolescent girls had had little or no milk until this study was made. When a quart of milk a day was added to their diet, they soon showed rapid bone growth and development, great improvement in their skin condition, and better general health.

Milk and Cod-liver Oil

Milk (4) and cod-liver oil made a difference in the health of some factory workers at the Eastman Kodak Company at Rochester, New York. Those who had a pint of milk and cod-liver oil each day missed work less often than those who did not get milk and cod-liver oil. The workers who received this extra food also did better work.

[1]See references listed on page 15.

Meat

Meat (5) made a difference in rebuilding the blood of donors to a blood bank. The blood of the donors who ate an extra serving of lean meat daily after a donation became normal at the end of two months. Without the extra serving of meat, it took three months for the blood to become normal.

Meat and Milk

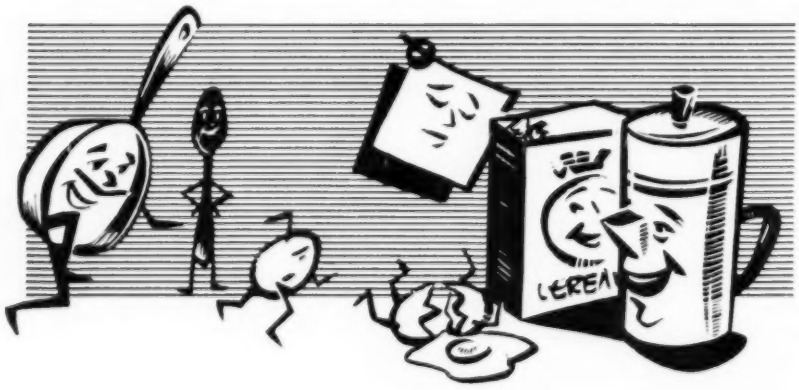
Meat and milk (6) made marked differences in the health of certain large groups. Those who used meat and milk in their daily meals had better health records than did those who lived chiefly on cereals, potatoes, and beans. The milk-and-meat eaters were taller by several inches, weighed more by several pounds, and were ill less often.

Milk and Fruit

Milk and fruit (7) added to regular meals made a difference in the health of several hundred Royal Air Force recruits. These young men had failed to pass the army physical examinations. Then, for nearly a year they were given extra milk and fruit; at the same time they had plenty of rest and exercise. When they were re-examined, 87 per cent passed the same examination they had failed a year earlier.

Breakfast

Several breakfast studies (8 and 9) were made with men and women. When they ate breakfasts that supplied at least a fourth of their daily needs, they could do more work and were more alert mentally than when they skipped breakfast or had only coffee. From these studies it was evident that breakfast is essential for people to do their highest levels of physical and mental work.



Enriched Flour and Fortified Margarine

In 1944, a study was made of the nutritional status of the people of Newfoundland (10). Medical examinations of these people showed nutritional deficiencies due to eating food very low in vitamin A, the three B vitamins, thiamine, riboflavin, and niacin and vitamin C. Upon examination of their food supply, it was found to contain very little of the above vitamins. Nor did the food contain much iron or calcium.

Following this study, steps were taken to improve the nutrition of these people by enriching all the flour they used with three B vitamins, thiamine, riboflavin, and niacin, and by fortifying all the margarine with vitamin A.

Four years later, medical examination of these people showed improvement in their physical condition that was attributed to the additional vitamin A and the B vitamins. The improvements due to the added vitamins were less inflammation of the mouth and face, fewer complaints of digestive disturbances and constipation. These people, especially the children, appeared more alert than at the beginning of the study.

Enriched Rice

The enrichment of rice in an experimental zone in the Philippines produced dramatic results (11). In this zone, deaths from beriberi, an illness due to too little thiamine (vitamin B_1) were reduced by 90 per cent. By contrast, in a similar section of the Philippines where the people ate the usual polished rice, the number of deaths from beriberi increased.

Meat, Milk, Fruit, and Vegetables

Meat, milk, fruit, and vegetables (12 and 13) added to the poor diets of pregnant mothers made a difference in their health and that of their infants. These mothers had better general health, a shorter labor period, and more success in nursing their babies than did the mothers who had a poor diet. The babies of the mothers who ate the extra food were stronger and ill less often, and none of the babies was premature. When the pregnant mother's diet is poor, the infant suffers as well as the mother. Proper food for the pregnant and nursing mother is good health insurance for both the mother and the infant.

Kind of Food

Cornell University students have found that the kind of food they eat makes a difference in their health. Each year the University medical staff finds a number of students who need help in selecting their food. They may be overweight or underweight. They may have diabetes, anemia, allergies, or other conditions that require wise food selection. Under the guidance of a medical nutrition-

ist, these students are taught to select food to correct their condition. Those who have diabetes or allergies are taught to choose foods that will help them live a more nearly normal life. The nutritionist reported that many overweight and underweight students learned to control their weight by selecting the proper food. They were happier, had more vitality, and were less tired after they reached a more nearly normal weight.

You have seen from these few samples how the right kind or proper amount of food made a difference in the lives of many people. It made a difference because the people had not been eating the right kind or the proper amount of food needed for a healthy body.

CHOOSING YOUR FOOD AND PLANNING YOUR MEALS

TO HELP you choose the kinds and amounts of food you and your family need, use the Basic Seven food guide on page 7. A fairly complete list of the foods in each group is given on pages 13-14.

Planning the meals for your family is easy because every family member needs the same basic foods. The Basic Seven is your guide in planning and preparing family meals. Some food from each group should be included in the meals daily because each group has a special job to do. The long list in each group (pages 13-14) offers a variety from which to choose. Within each, some foods may be less expensive and more abundant, but most of them are similar in food values. For example, when citrus fruits are scarce and expensive, as they usually are during the summer and fall, use tomatoes, cantaloupe, strawberries, or raw cabbage.

The amount of these basic foods that each person needs depends upon his age, activity, and physical condition. By planning ahead, you can make one meal preparation meet the needs of the whole family. For example, instead of preparing a special vegetable for the toddler, cook one for the entire family, and sieve or chop it for the child.

Try to plan breakfast, dinner, and lunch or supper so that each meal supplies about one third of the food needed for the day. That means breakfast too! Meals should be eaten at regular times. Skipping meals or eating in a hurry hinders good nutrition. And good nutrition is a step toward good health.

USE OF FOOD

THE BODY needs food to provide: 1. energy for work, play, and warmth; 2. material for growth and repair of worn-out tissue; 3. material for the regulation of body activities, such as the beating of the heart, the clotting of the blood, and the normal action of the muscles. Food materials and their use are given in the table on the opposite page.

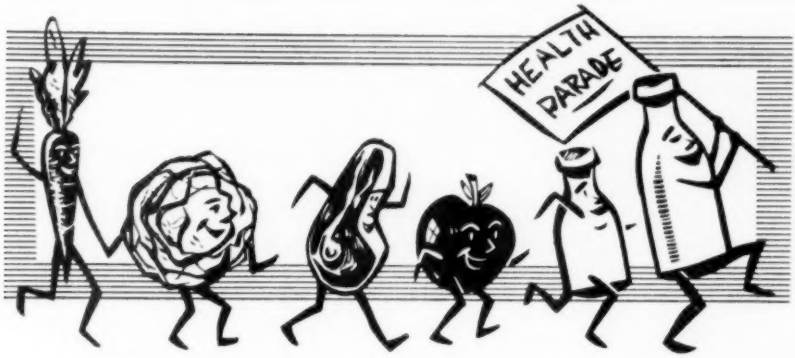


TABLE I. Basic Seven Foods, Their Food Materials and Use

Group	Foods	Number of servings	Food Materials			
			Name	Use		
				Energy	Growth and repair	Regulation
1	Green and yellow vegetables	One or more	Vitamin A in all; iron in leafy green vegetables		*x	x
2	Tomatoes, citrus fruit, raw cabbage	One or more	Vitamin C		x	x
3	Potatoes; other fruits and vegetables	Two or more	Small amounts of many nutrients	x	x	x
4	Milk, cheese, and ice cream	3 cups or more	Calcium, protein, vitamin A, and riboflavin (B_2)	x	xx	xx
5	Meat, poultry, fish, dried beans, and nuts Eggs	One One	Protein, iron, and B vitamins	x	xx	x
6	Bread, flour, cereals —whole grain or enriched	Some each meal	Starch, protein, iron, B vitamins	xx	x	x
7	Butter and fortified margarine	Some each meal	Fat, vitamin A	xx	x	

*x = moderate amount; xx = large amount

Energy Food

Foods that give you strength to work, play, and keep your body warm are energy foods—fats, sugars, and starches. These foods are burned in your body in much the same way that gasoline is burned in your car to make it go. The

energy produced by these foods is measured by calories. Who hasn't heard of calories! Fats contain about twice as many calories as do sugars and starches. For example, one tablespoon of butter or other fat produces about 100 calories but it takes two tablespoons of starch or sugar to yield 100 calories.

The amount of energy food you need depends upon the things you do. If you are an active young mother with a family of small children,—and how could you be other than active—you may need 2500 or more calories a day. Other family members who need plenty of energy food are the teen-agers; that 4-H Club boy probably needs more than his father does. The teen-age girl also requires plenty of energy food to have the alert, charming appearance so important to her.

As you grow older and are not quite so active, your body needs less energy food. To continue eating as much food then as when you were more active may add inches to your waistline. Why not eat food to keep you fit instead of fat?

Materials for Growth, Repair, and Regulation

Just as your house is built and repaired with certain kinds of building materials, so your body is built and repaired with certain kinds of food materials. Instead of lumber, cement, and bricks, your body is built with *proteins, minerals,* and *vitamins*. They are present in the body in combinations that produce the many different parts of the body—teeth, bone, muscle, blood, skin, hair, internal organs, and others.

PROTEIN

Protein, a vital building material, is found in meats, eggs, milk, cheese, cereals, and vegetables. Protein foods in the daily meals provide materials for growth and repair of body tissues.

The proteins from animal sources, such as meat, eggs, or milk, are better building materials than is the protein from dried beans and cereals. In your family meals each day you should have some protein from animal sources—

meat, fish, milk, cheese, or eggs. When beans are served instead of meat, a glass of milk with the meal will make the bean proteins more useful to the body. Likewise, milk with the breakfast cereal improves the use of the cereal protein.

A serving of meat, an egg, and three or more cups of milk will supply your daily protein need. The protein in the vegetables and cereals will make up the balance of your daily need. If you want to use one food in place of another, the Basic Seven Group 5 (page 14) will help you.

Extra protein needs

Your children need extra protein because they are growing. It takes a good supply of protein from meat, eggs, and milk to build strong muscles. Be sure your children get it. Keep that boy beaming with pride when he "shows his muscle"!

Pregnant and nursing mothers need more protein than they do before pregnancy. In a recent study (9), no cases were reported of toxemia, anemia, or other complications among pregnant mothers who ate well-balanced meals and an extra serving of meat. The infants of these mothers were in better physical condition at birth than were the babies of the mothers on poor diets. The mothers on the good diet were also more successful in nursing their babies than were the others.

MINERALS

Minerals may well be called the foundation and framework materials for the human body. Built with all the necessary minerals a body becomes well-shaped and strong. A dozen or more minerals are in the body structure. Those that are frequently low in the meals of many Americans are *calcium, iron,* and *iodine.* Food groups that supply these minerals, as well as other food materials, are indicated in table I (page 7).

Calcium

Calcium in combination with phosphorus and protein is needed to build strong bones, teeth, and blood. Calcium is needed for the clotting of the blood and for the normal action of the muscles. To work well, the body needs calcium daily throughout life. Phosphorus is generally abundant in our foods. A deficiency of this mineral is not common.

Milk is your best source of calcium. Unless you include milk or cheese in your meals each day, it is doubtful whether you can get enough calcium to supply your body needs. Because children are growing, their need for calcium is greater than is that of the grown man or woman. To meet this need, give your children from three to four cups of milk each day; adults, three or more cups; the pregnant mother, at least one quart; and the nursing mother, one and one-

half quarts or more. You will get the calcium you need whether the milk is used as a beverage or in dishes such as puddings, ice creams, soups, and sauces. If you depend on prepared dishes to get the milk you need, it will take careful meal planning. Drinking milk is much easier.

Iron

Iron is another mineral needed for body building. All the iron in your body would make only one small nail, but this small amount is needed to make red blood. You may be anemic if your diet is low in iron-rich foods.

Nature provides the infant with an extra supply of iron to build blood during the first weeks of life. After that, the baby needs iron-rich foods. Since there is only a small amount of iron in milk, you may add egg yolk, a good source of iron. If the baby must be fed a formula, he needs iron-rich food at an earlier age because cow's milk has only about a third as much iron as does mother's milk. Through early childhood there is a daily need for iron-rich food. Little bodies need to make extra blood to meet their rapid growth.

A second period in the child's life when much iron is needed is during adolescence. At this time, the body must manufacture more blood to supply the rapidly growing body. Teen-age girls need a larger blood supply to meet their rapid growth demands, but also to replace the blood lost during menstruation.

The third time in life when the iron need of the body is increased is during motherhood. The pregnant mother should give special attention to choosing foods rich in iron and high in protein to maintain the best quality blood. If she keeps her blood quality high, the baby will have stored in its body the iron it will need during the first few months when milk is its chief food. While the mother is nursing the baby, the iron and protein content of her meals should be high.

It is easy to choose foods that provide enough iron to build red blood. In the Basic Seven Groups, iron is supplied by the leafy green vegetables in Group 1; the meats, beans, and eggs of Group 5; and the whole-grain and enriched cereals in Group 6.

Iodine

Another mineral needed for good physical and mental health is iodine. The activity of the thyroid gland depends on iodine. The thyroid gland regulates the use of the food in the body, just as the carburetor regulates the burning of gasoline in your automobile. The lack of iodine in your food may cause simple goiter; in children it may also retard growth.

Just as the body needs more iron or calcium at certain times, the same is true of iodine. During adolescence or pregnancy, when extra demands are made on the body, more iodine seems to be needed.

The use of iodized salt in cooking is an easy way to get iodine in the family meals. Iodized salt is recommended by many physicians and is generally available on the grocers' shelves. A delightful way to get iodine is to serve sea foods, such as salmon, oyster, codfish, haddock, or others, at least once a week. Cod-liver oil also supplies iodine.

VITAMINS

Vitamins serve both as body-building and body-regulating materials. Scientists have found that some of the vitamins are essential for the growth and health of human beings. The ones discussed here are vitamins A, C, D, and three of the B group—thiamine (B_1), riboflavin (B_2), and niacin.

Vitamin A

Vitamin A is needed for growth, a smooth, clear skin, and healthy membranes that line the mouth, nose, lungs, and other parts of the body. When these membranes are healthy, microbes find it more difficult to enter the body. Vitamin A is a "must" for eyes to see at night; without it, night-blindness may develop. No one who has night-blindness should drive a car or pilot a plane. See Basic Seven Group 1, p. 13, for foods that contain vitamin A.

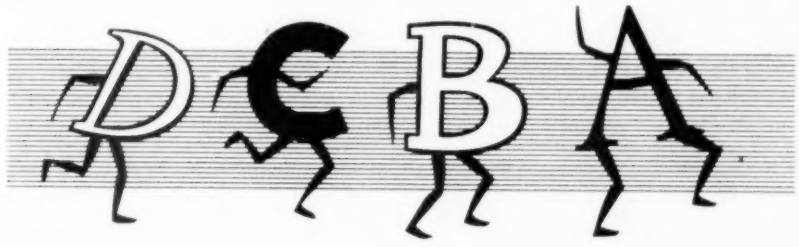
Unlike some of the vitamins, A is not destroyed during cooking. But if vegetables are allowed to wilt, some of the vitamin A is lost. You can count on this vitamin in your green and yellow vegetables if you use them fresh for cooking, canning, or freezing.

Vitamin C

Vitamin C is as fickle and unstable as vitamin A is steady and dependable. But vitamin C is just as important to good health. It is needed for good teeth, healthy gums, and strong blood vessels.

Any of the foods listed in Group 2 of the Basic Seven are good sources of vitamin C. Of the foods in this Group, oranges, grapefruit, strawberries, and cantaloupes are about equally rich in vitamin C. But it takes twice as much tomato juice as orange juice to supply the same amount of this vitamin.

In addition to Group 2, many of the foods in Groups 1 and 3 contain enough vitamin C to be worth counting. To get as much vitamin C as you can from



the vegetables in these groups: 1. cook, can, or freeze them fresh from the garden—vitamins are destroyed when vegetables wilt; 2. cook them in a small amount of *boiling water*—just enough to keep the vegetables from scorching; 3. cook them only until done—you'll save flavor, color, texture, and vitamins; 4. eat them as soon as cooked—flavor and vitamins decrease on standing, texture and color change.

B-vitamins

The B-vitamins are a large family. Thiamine (B_1), riboflavin (B_2), and niacin are needed by all of us.

Thiamine (B_1) helps to develop the appetite, aids digestion, and helps to prevent constipation. It plays an important part in the body's use of sugar and starch and helps to keep the nervous system healthy. Like vitamin A, it too is needed for growth.

Lean pork and whole-grain cereals contain large amounts of thiamine (B_1). In the milling of wheat for flour, this vitamin along with the other vitamins and minerals is removed. So that people may get some of these important nutrients in bread and flour, a law was passed in New York State requiring millers to add the three B-vitamins, thiamine, riboflavin, and niacin, and the mineral iron to all family flour. The baker adds these nutrients to the bread if he uses flour that is not enriched.

Riboflavin (B_2) is another B-vitamin needed for growth and general well-being. It also helps to prolong the vigor of life. Like vitamin A it is also needed for healthy eyes.

Riboflavin (B_2) is found in milk, meat, eggs, cereals, and leafy green vegetables. Milk is an especially good source of this vitamin. Riboflavin is destroyed by light. Milk (14) left for an hour or two on the doorstep or window sill in bright light loses much of its riboflavin.

Niacin is another of the B-vitamins needed for good physical and mental health. It helps to prevent skin disorders and nervous disturbances. It also aids digestion.

Vitamin D

Vitamin D is needed for the growth of bones and teeth. To do its work well, it must have plenty of calcium and phosphorus. Bowlegs, bulging foreheads, and other bone deformities may be due to a lack of this vitamin during the growing period.

Small amounts of vitamin D are found in eggs, herring, sardines, tuna, and salmon. Direct sunshine causes this vitamin to be formed within the body. When the sun does not shine, we can get it from cod-liver oil. Children and pregnant and nursing mothers need this vitamin.

THE BASIC SEVEN FOOD GROUP

THE FOLLOWING complete list of foods under each of the Basic Seven groups may help you to make your meals more interesting by choosing more of a variety for your family meals. It is easier to keep a family well-fed when there is variety in their meals.

1. LEAFY, GREEN, AND YELLOW VEGETABLES. Raw, cooked, canned, or frozen. ONE OR MORE SERVINGS DAILY.

Asparagus, green	Carrots	Peppers, green or red
Beans, Limas and snap, green	Chard	Pumpkins
Broccoli	Collards	Spinach
Brussels sprouts	Edible greens	Squash, winter
Cabbage, green	Lettuce, leaf	Sweet potatoes
	Peas, green	

2. CITRUS FRUIT, TOMATOES, RAW CABBAGE, OTHER HIGH VITAMIN-C FOODS. Fresh, canned, or frozen. ONE OR MORE SERVINGS DAILY.

Grapefruit and juice	Strawberries, raw	Cabbage, raw
Oranges and juice	Limes	Greens, salad
Tomatoes and juice	Tangerines	Peppers, green, raw
Lemons and juice	Cantaloupes or muskmelons	Turnips, raw
Pineapples, raw		Potatoes, new, cooked in skins

If foods in Group 2 are hard to get, use more from Groups 1 and 3, especially raw ones.

3. POTATOES AND OTHER VEGETABLES AND FRUITS. Raw, cooked, canned or dried. TWO OR MORE SERVINGS DAILY.

Potatoes	Parsnips	Cranberries
Beets	Radishes	Currants
Cabbage, white	Rutabagas	Dates
Cauliflower	Sauerkraut	Peaches
Celery	Squash, summer	Pears
Corn, sweet	Turnips	Pineapple and juice, canned
Cucumbers	Apples	Plums
Eggplant	Apricots	Prunes
Lettuce, head	Bananas	Raisins
Mushrooms	Berries	Rhubarb
Onions	Cherries	Watermelon

4. MILK, CHEESE, ICE CREAM. Milk: whole, skim, evaporated, condensed, dried, or buttermilk.

CHILDREN through teen-age	from 3 to 4 cups daily
GROWN-UPS	at least 3 cups daily
PREGNANT WOMEN	at least 1 quart daily
NURSING MOTHERS	about 1½ quarts daily

You may use the following foods to get the same amount of calcium as you get from 1 CUP OF MILK:

Cheddar-type cheese	1-inch cube
Cream-type cheese	½ cup
Evaporated milk	½ cup
Cottage cheese	1½ cups
Ice cream	2/3 pint or 1 1/3 cups
Dried milk	4 tablespoons

5. MEAT, POULTRY, FISH, EGGS, DRIED BEANS AND PEAS, NUTS. Meat, poultry, fish: fresh, canned, cured, or frozen. ONE SERVING DAILY.

- Beef
- Veal
- Pork
- Lamb
- Mutton
- Lunch meat, as bologna
- Poultry
- Game
- Fish and shellfish
- Eggs, 1 daily if possible
- Dried beans and peas; nuts and peanut butter, 2 or more servings a week
- Variety meats
  - Liver
  - Heart
  - Kidney
  - Brains
  - Tongue
  - Sweetbreads

6. BREAD, FLOUR, CEREALS. Whole-grain or enriched or restored. SOME EVERY DAY.

- Breads and rolls
  - Whole wheat
  - Dark rye
  - Enriched
  - Combinations of flours
- Crackers, enriched, whole-grain, or soya
- Flour, enriched, whole-wheat, or other whole-grain
- Cereals: whole-wheat or rolled oats; brown or converted rice; or other cereals, whole-grain, enriched, or restored

7. BUTTER, FORTIFIED MARGARINE. SOME DAILY.

ENERGY FOODS. The foods listed here chiefly give energy. They may be eaten in addition to the Basic Seven foods, but not in place of them.

- Fats
- Salad dressings
- Jellies
- Jams
- Sirups
- Cakes
- Pastries
- Candies
- Other sweets

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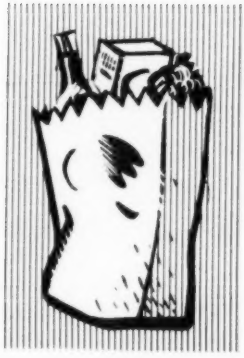

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